

DEFENCE PRODUCTS OF PAKISTAN



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MODP AN OVERVIEW

Meet the requirements of Pakistan Armed Forces through a prudent combination of procurement (local and import) and indigenous production, with a continued effort to enhance the component of indigenous production; and also export our defence products to friendly countries



Ministry of Defence Production manages different Defence Production Organisations which include Pakistan Ordnance Factories (POF), Heavy Industries Taxila (HIT), Pakistan Aeronautical Complex (PAC), National Radio and Telecom Corporation (NRTC), Karachi Shipyard and Engineering Works (KS&EW) and miscellaneous other organisations. These organisations are undertaking manufacturing of defence hardware as well as rebuilding and upgradation of the inducted equipment of the Armed Forces. The products are made in accordance with the highest standards of quality, which is evident from the steadily increasing exports.

At the time of partition in 1947, Pakistan did not inherit any defence manufacturing infrastructure. A beginning was made in the early fifties when a small arms manufacturing facility was created at Wah. Over the years, as the needs of Pakistan Armed Forces grew, the facility also expanded. Today, the Pakistan Ordnance Factories meet the entire requirements of small arms and machine guns of the Armed Forces. All the requirements of ammunition of small arms, mortars and artillery shells and military explosives are also being met by these factories.

With the establishment of Defence Production Ministry in 1972, the manufacture and rebuilding of tanks, armoured personnel carriers, assault bridges, light trainer aircraft, fighter aircraft, and indigenous production of mine hunters, submarines and fast patrol boats was undertaken.

Under a phased development programme, the production of anti-tank and anti-aircraft missiles, night vision devices, LASER Range Finders, military communication equipment, multi barrel rocket launchers was also undertaken.

Over the years, Pakistan Defence Production Organisations have achieved excellence and world-wide acceptability. They are also actively pursuing R&D on different hi-tech projects in line with the new trends and as per the demands of different users.

Today, Pakistan Defence Production Organisations are not only aptly fulfilling the needs of Pakistan Armed Forces but also actively engaged in Exports / Joint Ventures with number of friendly countries.

PAKISTAN ORDNANCE FACTORIES



PAKISTAN ORDNANCE FACTORIES

Pakistan Ordnance Factories (POF) is the largest defence industrial complex under the ministry of defence production, producing conventional arms & ammo as per international standards. Presently, POF comprises of 14 ordnance factories and seven commercial subsidiaries.

POF is premier defence industry in Pakistan, producing a wide range of conventional arms & ammunitions. POF products are internationally recognized for quality, reliability and competitive prices.

Pakistan Ordnance Factories also specialize in the manufacture of commercial explosive, hunting ammunition and possess extensive facilities for the manufacture of brass, copper and aluminum ingots, extrusions and sections for non-military applications. A garments factory, which has the state of the art cloth cutting facilities and most modern stitching units, manufactures military uniforms and can cater for the needs of the civil sector.

Products: All production units of POF are ISO 9001-2000, ISO 14001 and ISO 17025 certified. Most recently, POF's qualification for OHSAS 18001 has added another feather to the POF's cap. By venturing into the field of exports on a regular basis and on a modest scale, POF has established its reputation as a supplier of quality goods in the international market. Exports have been made not only to developing countries but also to buyers in Europe and USA.



Factories:

Weapons Factory.

Propellants Factory.

Machine Gun Factory.

Explosive Factory.

Small Arms & Ammo Factory.

Filling Factory.

Medium Artillery Ammo Factory.

Brass Mills.

Heavy Artillery Ammo Factory.

Tungsten Alloy Factory.

Tank & Anti-Tank Ammo Factory.

Carbide Factory.

Bombs & Grenade Factory.

Clothing Factory.

Subsidiaries are:

Wah Nobel.

Wah Industries Limited.

Hi Technology Plastics.

POF PRODUCTS

Infantry Weapons

POF Eye
Sub-Machine Gun SMG-PK, Pk1
Sub-Machine Gun MP5A2, MP5P3
Automatic Rifle G3A3 & G3P4
Machine Gun MG3 (MG1A3)
Anti-Aircraft Machine Gun 12.7 MM TYPE 54
Semi-Automatic Precision Sniper Rifle PSR 90
Pistol PK-9

Small Arms Ammunition

5.56 X 45 MM M-193 Ball & M-855 Penetrator
7.62 X 51 MM Ball & Tracer
9 X 19 MM Ball (1Z & 2Z)
7.62 X 54 MM Ball & Tracer
7.62 X 39 MM Ball
7.62 X 51 MM Blank (STAR)
7.62 X 51 MM Rifle Grenade

Artillery Ammunition

203 MM HOW HE M 106 (8")
155 MM HOW HE M107
130 MM HE
122 MM HOW HE
105 MM HOW
QF 25 PDR MK 2/1
122 MM HOW HE-D30

Mortar Bombs

120 MM Smoke WP M44A1
120 MM HE M44A2
81 HE M 57 D A2
81 MM Smoke WP
81 MM Illuminating, Signal (Red & Green)
60 MM Mortar Bomb HE
60 MM Smoke WP P2A2
60 MM Illuminating & Signal (Red & Green)

Aircraft & Anti-Aircraft Ammunition

37 MM HEAT
30 x 113 MM HEI, API & BALL
23 MM
20 MM x 102 Phalanx Ammunition
12.7 x 108 MM API & APIT
Bomb HE AC 500 Lbs



Tank & Anti-Tank Ammunition

- 125 MM H.E.FS TK
- 125 MM APFSDS/T
- 106 MM HEAT M344A3
- 105 MM APFSDS P1A1
- 105 MM HE/TK P1 A1
- 105 MM TK HESH L 35 A 3
- 100 MM TK HESH
- 100 MM HE/TK P1A1
- 100 MM APFSDS/T
- Tungsten Alloy Penetrators
- 73 MM FSRA HEAT SPG9 (RAAD)
- 40 MM HEAT P1 MK1 (RPG-7P)



Grenades

- Hand Grenade Arges 84 P2A1
- Grenade Target Indication
- Smoke Discharge/Grenade WP P3 MK1
- Charge Demolition No.1 6 Inch Beehive MK-1
- Demolition 1 OZ CE Primer
- Flare Trip Wire MK 2/2
- Cartridge Signal Shooting Pencil Type
- Fuzes, Detonators & Primers



Commercial Explosives

- Commercial Explosives
- Powder Explosives
- Emulsion Explosives
- Blasting Accessories
- Detonators
- Leher Ignition System
- Chemical (Polymers)

Military Explosives & Propellants

- Explosives
- Propellants (Mortar Bombs and Rockets)
- Propellants - Small Arms Ammunition

Rockets

- 122 MM HE (MBRL) YARMUK
- 73 MM FSRA HEAT SPG9 (RAAD)
- 40 MM HEAT P1 MK1 (RPG-7P)
- Caliber 40 MM RPG-7AP
- Grenade Rifle HEAT P-2 MK1 (RG-1)



TO WHOM WE EXPORT

Prime mission of POF is to support armed forces of Pakistan. The surplus capacity is utilized for exporting its products to various countries in Asia and the Far East, Africa and the Middle East, North America, the central Asian states and Europe.



PAKISTAN AERONAUTICAL COMPLEX



PAKISTAN AERONAUTICAL COMPLEX

Pakistan Aeronautical Complex (PAC) offers type specific and general engineering services to the Defence Forces of Pakistan and to our friendly country customers. Type Specific Services include aircraft, engines, air borne & ground based radars and their associated components. General Engineering Services include calibrations, heat & surface treatments, non-destructive inspections, high and low end parts manufacturing, composite & rubber parts manufacturing, PCB stuffing, environmental testing, PCB designing etcetera.

Products: Products of PAC include JF-17 Thunder, Mushshak and Super Mushshak as its core products. A wide range of Avionics equipment, high end & low-end aerospace products for military and commercial use exist and is constantly building up to support our valued customers.

Specific and General Engineering Services for the Defence Forces of Pakistan



JF-17 THUNDER

JF-17 Thunder is an advanced, light-weight, all weather, day / night multi-role fighter aircraft; developed as a joint venture between Pakistan Aeronautical Complex (PAC), Kamra and Chengdu Aircraft Industry Corporation (CAC) of China. It possesses excellent air-to-air and air-to-surface combat capabilities. The state-of-the art avionics, optimally integrated sub-systems, computerized flight controls and capability to employ latest weapons provides decisive advantage to JF-17 over adversaries of same class. This, all weather, multi-role light combat fighter has remarkable high combat maneuverability at medium and low altitudes. With effective firepower, agility and combat survivability, the aircraft is likely to emerge as a potent platform for any air force.



State-of-the art avionics, optimally integrated sub-systems, computerized flight controls and capability to employ latest weapons

Specifications

Physical Parameters

Length	49 ft
Height	15.5 ft
Wingspan	31 ft
Empty Weight	14,520 lb

Performance Parameters

Maximum Take Off Weight	27,300 lb
Max Mach No	1.6
Maximum Speed	700 Knots IAS
Service Ceiling	55,500 ft
Thrust to Weight Ratio	0.95
Maximum Engine Thrust	19,000 lb
G Limit	+8,-3
Ferry Range	1,880 NM

Armament

No of Stations	07
Total Load Capacity	3400 lb

The aircraft is fitted with modern Stores Management System incorporating accurate weapon delivery modes and solutions involving minimum pilot workload. The aircraft is capable of carrying some of the most modern as well as conventional weapons



OTHER PRODUCTS

K-8 Aircraft



Satisfactory flying qualities in accordance with the requirements set forth in MIL-F-8785C IV for highly maneuverable aircraft.

Karakoram-8 (K-8), Basic Cum Advance Jet Trainer, is co-developed by Aircraft Manufacturing Factory (AMF), Pakistan Aeronautical Complex, Kamra, and China Nanchang Aircraft Manufacturing Company (CNMC). The aircraft is being used for imparting basic and operational jet training to newly inducted pilots at PAF Academy Risalpur.



Mushshak Aircraft

Avionics Systems

Canopy Manufacturing

Drop Tanks Production

Electrical Harnesses UAV

HEAVY INDUSTRIES TAXILA



HEAVY INDUSTRIES TAXILA

Heavy Industries Taxila (HIT) was established in the seventies and its first production unit, Heavy Rebuild Factory (T-Series) went into series production in 1980. Today, HIT rebuilds and modernizes Armoured Vehicles of both eastern and western origin and manufactures Main Battle Tanks (MBT), Armoured Recovery Vehicles (ARV) and Armoured Personnel Carriers (APC). HIT has today grown into a large military industrial complex that consists of six major production units, support engineering and research & development units.

Large military industrial complex that consists of six major production units, support engineering and research & development units.



HIT PRODUCTS

Defence Products

- Tank Al-Khalid.
- Tank Al-Zarrar.
- APC SAAD.
- APC TALAH.
- Command Post Carrier (SKAB).

Commercial Products

- Armoured Land Rover Defender 110
- Armoured Toyota Altis 1.8 VVTI
- Armour Toyota Land Cruiser
- Toyota Hilux VIGO
- Mohafiz Hybrid
- Mohafiz-II
- Mohafiz-III
- Armoured Guard Post 1 Man
- Armoured Guard Post 2 Man
- Bomb Blanket
- Hifazat
- North Benz 6x4 Prime Mover

Tank Al Khalid

Combat Weight	46-48tons
Crew	3
Max Speed	70km/h
Cursing Range	430km
Main Gun	125mm bore
Type of Ammo	APFSDS,HEAT,HE
Coxial Machine gun	7.6mm
Anti Aircraft Machine Gun	12.7mm
Grenades	8 smoke, 4HE



Tank Al Zarrar

Combat Weight	40tons
Crew	4
Cross Country/Max Road Speed	35km/h & 55km/h
Main Arnament	29rds
Type of Ammo	APFSDS,HEAT,HE
Coxial Machine gun	2500rds
Anti Aircraft Machine Gun	500rds
Smoke	8 grenades
Laser Range Finder	Yes



APC Saad

Length	263.5inches(6.09m)
Width	100inches(2.54m)
Height Without Gunner shield	73inch (1.85m)
Weight Combat loaded	15.5 with add on Armour
Weight, curb	11.5 ton
Area including roof	28.97m2
Personal capacity	15 including Driver
Speed (level land)	72KMPH



APC Talha

Length	218.5inches
Width	100inches(2.54m)
Height Without comd copula	102inch
Weight Combat loaded	12 Ton
Weight,curb	12 ton
Personal capacity	13 including Driver
Speed (level land)	Upto 40KMPH



Command Vehicle (CV): SKAB

Length 208 inches
Width 100inches
Height Without comd copula 111inch
Weight Combat loaded 12.5 Ton
Weight,curb 11.5 ton
Personal capacity 3 including Driver
Speed (level land) Upto 40KMPH



Land Rover Defender 110

Engine 2.7 v6 diesel
Hp - 124
Bullet proof front, rear and door glasses
Run flat tyres
Improved brake and suspension system
Air conditioner
Protection B6 level with blast protection of floor against 3 kgs of TNT



Mohafiz III

Platform land toyota land cruiser 79
Bullet proof glasses
Run flat tyres
Seating capacity - 8 (2+6)
Firing ports - 10
Turret - rotating with firing ports
Protection level - B7



Armoured Guard Post (2 Men)



Hifazat



Armoured Guard Post (1 Man)



Bomb Blanket

GLOBAL INDUSTRIAL & DEFENCE SOLUTIONS

GLOBAL INDUSTRIES & DEFENCE SOLUTIONS

GIDS are making efforts to enhance its share in local industrial & corporate sectors by offering technological products for the niche market. Company is primarily focusing on promoting self-reliance by means of indigenous technology derived from state-of-the-art machinery, equipment and highly enriched expertise available in various manufacturing units to fulfill the needs of its diversified customer base.

AIR SYSTEMS

Shahpar UAV System

Shahpar is a medium range tactical UAV System with autonomous take-off and landing. It can carry various types of payloads integrated for reconnaissance and day & night surveillance. Other features include accurate lateral, longitudinal trajectory control, mission planning, management & control, geo referencing & geo pointing for terrestrial targets.

Performance Characteristics

Configuration	Canard pusher
Air Vehicle Length	4.2 m
Wing Span	6.6 m (22')
Gross T/O Weight	480 kg
Payload Weight	50 kg
Endurance	> 7 hrs
Max operating Altitude	5000 m (17000 ft) Approx.
Cruise Speed	150kph
Maximum power of engine	100hp
Data link Range (real time)	250 km
Guidance / Tracking	Autonomous, GPS Based (manual control channel available)
Take-off / launch	Automatic, Wheel take-off
Landing / recovery	Automatic Landing, manual pilot and parachute option available



Uqab UAV System

Uqab is a tactical UAV System which can be effectively used for battle damage assessment, aerial reconnaissance, artillery fire correction, joint forces operations, search and rescue missions, coastal area surveillance, route monitoring, internal security / mob control and flood relief operations etc. Presently the system is being used by Pakistan Security Forces.

Performance Characteristics

Range	150 km
Endurance	6 hrs
Height Ceiling	3,000 m
Speed	120 ~ 150 km/hr
Launch/Recovery	Wheeled
Flight Mode	Autopilot/RPV 1000 way points, Re-programmable during flight Fail-safe mode, Loiter mode & User defined holding patterns
Tracking/Navigation	GPS Based
Telemetry Data	Real time digital video Position and health of UAV Geo-referencing
Payload Weight/Type	Gyro-stabilized gimbal with color day camera, thermal imager with target tracking and locking capabilities
Power Plant	250 km



Huma Tactical UAV System

Huma UAV is available with complete control and communication station. Huma is capable of performing of remote sensing and aerial robotic applications applications reliably at low operation cost.

Performance Characteristics

Range	100 km
Endurance	4 hrs
Cruise Altitude	(3280-9842 ft) AMSL
Maximum Speed	180 km/hr
Launch	Rocket Booster Assisted
Operational Radius	80 km
Recovery	Parachute Landing
Power Plant	22 BHP Two Cylinder Two Stroke Engine
Navigation & Control	GPS based auto piloting system with return home mode in case of GPS loss.
Payload Capacity	20 kg (44 lb)



Scout Mini UAV System

Scout Mini UAV System is designed for portability. It is modular, portable, light weight and easy to deploy. It is electric powered, capable of completely autonomous flight and carrier an electro-optical payload for day time surveillance/ reconnaissance

Range	>5mins (approx)
Endurance	4 hrs
Height Ceiling	500 m
Launch	Hand / Catapult- launched
Recovery	Skid landing / Net Recovery
Flight Mode	Autonomous / RPV
Tracking / Navigation	GPS Based
Payload	3 x switchable Low-lux Cameras with different Zoom levels
Power Plant	Electric Motor
Weight	4 Kg



Rabta C41 & Air Defence Automation System

Scout is a mini UAV System which is designed for portability It is modular, portable, light weight and easy to deploy, It is electric powered, capable of completely autonomous flight and carries an electro-optical payload for day time surveillance / reconnaissance.

Air Combat Maneuvering Instrumentation System

The ACMI system is designed to be range less and can be operated without restriction in any area.

LISA-4000 AHRS Inertial Reference and Navigation System

LISA-4000 belongs to the family of Strap Down Inertial Reference and Navigation System. It provides necessary Navigation functions for mission success



AVTR Airborne Video Tape Recorder

Airborne Video Tape Recorder (AVTR) System is designed for recording of Head up Display (HUD) / Sight View of combat/training aircraft and helicopter applications.



GP Series Bombs

General Purpose Steel Bombs

Effective against all kinds of ground targets

Pre-Fragmented Bombs

New Concept in optimizing the effectiveness of conventional bombs

Incendiary Pre-Fragmented Bombs

A combination of steel balls and especially developed incendiary metal alloy



AB-Series

Fuzes play a key role in optimizing the performance of air and ground bust bombs. GIDS is one of the few companies in the world that has complete command over the Technology for electric fuzes. GID has successfully developed the following fuzes.

- o Impact Fuzes
- o Proximity Fuzes
- o Multi-Role Fuze



Sea Surge Anti-Submarine Weapon

Sea Surge air launched anti-submarine weapon can be deployed at shallow depths from either a fixed wing aircraft or a helicopter. This weapon is ideally suited for coastal defence operations.

Technical specifications

Total length	142 cm
Dia	28 cm
Weight of full prepared unit	150 kg
HE	82 kg
Firing depth	21 meter

System configuration

- Main body carrying HE
- Fuze
- Tail unit
- Suspension and releasing mechanism



INFRARED FLARES & MOHAFIZ

Aircraft counter measure for decoying heat seeking missiles. These IR Flares are compatible with both NATO & Warsaw standard aircraft.

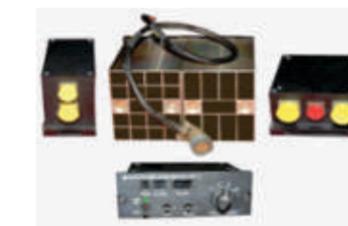
Technical specifications

	CMF1	CMF2
Aircraft	NATO	Chinese
Dispensers	ALE 29 A, ALE 39, ALE 47	GT-1, GT-1P
Firing Requirement	05 A pulse for 50 ms	0.7 A pulse for 35 ms
Burning Time	4 Sec	4 Sec



MOHAFIZ Chaff & Flare Dispenser System

- Mohafiz Chaff & Flare dispenser system is an electromagnetic (RF) and Infrared (IR) countermeasure self-protection dispensing system for airborne objects.
- Chaff gives protection against Radar Guided Missile and Flare protects against infrared guided missiles
- When this system is integrated with radar warning receiver (RWR) and missile approach warning system (MAWS), the Mohafiz CFD system is effective in multiple threat environments



ANZA MK-II

Surface to Air Guided Missile Anza MK-II missile weapon system is a Second Generation, Shoulder Launched, Man-Portable Short Range Air Defense system effective against low altitude air borne targets.



AUTOMATIC FIRE CONTROL SYSTEM (Up-gradation of 37mm Anti-Aircraft Gun)

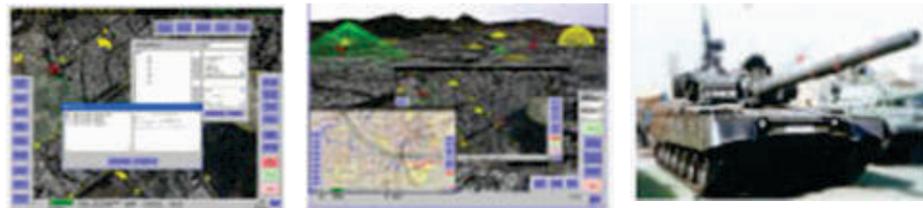
The original 37mm twin barrel AD gun has been upgraded in order to meet the present combat threats. The upgraded gun with its new firing system gives a unique combination of modern technology resulting in a very reliable weapon system. Capable to track high speed targets coupled with auto ranging. The gun can be operated in three modes, i.e. joystick, handheld fire control and laser aiming sight.



LAND SYSTEMS

Pak-IBMS (Rehbar) Integrated Battlefield Management System

Integrated Battlefield Management System (IBMS) is designed for the operations of armour units in the field to meet the requirements of future battlefield. The user-friendly system provides battlefield awareness through comprehensive land navigation system based on GPS and digitized maps. It enables commanders in mission planning, modification and dissemination of plans, monitoring of battlefield at tactical and operational level, through safe and secure radio network. Pak-IBMS(Rehbar) also facilitates commanders in remote firing of AAMG by auto tracking the aerial and ground.



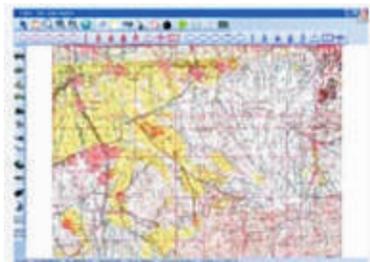
PAKFIRE-Artillery Fire Control System

PAKFIRE is a modular, reliable, secure, user friendly and fully integrated Artillery Fire Control System that automates all operational functions of artillery and ensures fast and accurate fire on targets



PAKSIM-Artillery Forward Observer Simulator

PAKSIM, Artillery Forward Observer Simulator (AFOS) is desktop application that provides training for the forward artillery observer in near-real environment in a classroom/simulation lab using indoor realistic scenarios.



Nigehbaan Day/Night Surveillance System

Nigehbaan surveillance system is used for day and night forward observation, target acquisition and border monitoring. It has the capability to determine the range of required targets.



NOD: Night Observation Device

NOD is a portable, long range multi-sensor system for target acquisition, border patrol and perimeter security. The NOD system comprises of digital magnetic compass, GPS, pan and tilt unit.



DGM: Digital Goniometer

The Digital Goniometer (DGM-1) is used with Laser Range finder to precisely measure the coordinates of the target



LTS: Laser Threat Sensor

LTS786P is an early warning device which gives audio and visual alarms of threat by sensing a laser beam aimed at it from any direction.



EW Systems

Various indigenous EW Solutions have been developed .

- Laser Systems
- AR3 Laser Range Finder
- LRH 786Q Laser Range Finder
- Laser Designator & Ranger



Baktar Shikan -Anti-tank Guided Missile Weapon System

Baktar Shikan is a second-generation anti-tank missile weapon system which pursues the principle of optical aiming, IR tracking, remotely controlled and wire transmitted guidance signals. The system can quickly be dis-assembled into the following four sub-units, encased missile, tripod, goniometer and control box each weighing not more than 25kg thus making the system man-portable.

Range	3,000 m
Hit Probability	>90 %
Penetration Probability	90 %
Rate of Fire	2-3 Rds per minute
Depth of Penetration	600 mm HRA



NAVAL SYSTEMS

SLTA: Slim Line Towed Array Sonar for Naval Application

Detection of targets by the naval ships and submarines has always been very difficult and challenging due to the peculiar sea and associated environmental conditions. However the radiated noise from own platform makes it difficult or at times even impossible to detect weak signals from silent or remote targets. The successful design and development of the SLTA has significantly enhanced the underwater detection capability of the naval platforms.

Main features

- Equally adaptable for surface ships or submarines
- Enhanced detection and classification due to longer array having wide acoustic aperture, reduced flow noise and efficient processing
- Smaller diameter for easier handling onboard to facilitate its deployment and retrieval during all weather and covert operations.

BPS Bridge Pilotage Simulator

Bridge Pilotage Simulator (BPS) is developed for training of bridge-crew in navigation and other operational tasks.



ASTT-Action Speed Tactical Trainer

ASTT is a real time Simulator that provides tactical training to Naval Officers and men in surface, subsurface and air operations. Based on state of the art development techniques the Simulator ensures generation and execution of multidimensional game scenarios in the most realistic sea environments.

NAVAL VESSEL OPS ROOM SIMULATOR

Tactical training of Operations Room crew onboard naval ships is a paramount requirement of modern naval warfare. For this purpose sending of naval units at sea for longer durations is an expensive proposition.



RIBAT ESM System

Electronic Support Measures (ESM) system is the most important aspect of Electronic Warfare (EW), required for a variety of ground, surface and airborne applications, especially in maritime scenario



NAVAL POLICE BOAT

Policing of inshore waters against any illegal activity demands for reliable & potent harbour defence capable to neutralize any illegal act in harbour. The boat can carry a crew of 4-5 personnel for a maximum of 8 hours at a speed of 35 knots



SIMPAS: Propulsion Simulator for Submarine

Propulsion Simulator is real time simulator of propulsion control room for offshore training of crew members of AGOSTA 90B submarine.



SIMDAS: Naval Vessel Operations Room Simulator

Diving Simulator is real time simulator of control room of Agosta 90B submarine for training of crew members.

NBC SYSTEMS

NBC DEFENCE & IPE:

Nuclear Biological & Chemical Defence Suit

The NBC defence suit provides physical protection against CBW Agents for 24 hours. It provides protection against direct contact with and contamination by radioactive, biological and chemical substances. It is generally designed to be worn over extended periods to allow the wearer to fight while under threat or under actual NBC attack.



Individual Protective Equipment



HEADS: High Efficiency Advanced Decontamination System

- Used for decontamination / detoxification of vehicles, gears, buildings, equipment, terrain and personnel against CBW Agents.
- The equipment consist of high pressure pump and heating system and is capable to spray hot / cold water, steam and decontamination solution over the contaminated area
- Easy transportation & moveable





BALLISTIC HELMET

GIDS's Ballistic Helmet protects the user from bullets, fragments and provides wearing comfort due to balanced weight distribution which does not impede the performance of the user. The helmet is relatively lightweight and provides maximum comfort, mobility.

METALLIC MINE DETECTOR

A highly sensitive metal detector for effective detection of anti-personnel and anti-tank mines.

NON METALLIC MINE DETECTOR

A micro processor based detector for effective detection of non-metallic anti personnel & anti-tank mines.

EXPLOSIVE DETECTOR

Hand Held and Long Handle Detector used for detection of explosive materials. Operates on principle of Ion Mobility spectrometry technique.

STUN GRENADE

A device to produce high intensity illumination and loud bang which causes temporary disorientation and incapacitation of persons. It is non lethal and does not contain explosive material. No fragments are produced after initiation. Available in single bang and six bang versions.

TEAR GAS SHELL

Contains CS composition and is used for riot control by the law enforcing agencies, using 38mm tear gas gun. The parameters and its characteristics conform to international standards.

CS GRENADE

A non lethal hand throw grenade used for riot control. Produces white fumes of CS which cause severe irritation of respiratory tract, burning pain in nose and burning sensation in eyes etc.

WALK THROUGH SCANNING GATE

Walk through Gate is used for detection of metal contents at security locations. The system works on Induction Balancing (IB) technique. Whenever a metallic object comes within the vicinity of WTS an error signal is produced, which is digitally processed.



NATIONAL RADIO & TELECOMMUNICATION CORPORATION

NATIONAL RADIO & TELECOMMUNICATION CORPORATION

National Radio and Telecommunication Corporation (NRTC) is a World-Class telecommunication and electronic equipment manufacturer. We have built our business around our ability to offer creative and tailored solutions worldwide, providing the best total value while building premier customer relationships.

Products: With its highly skilled design Team equipped with state of the art test equipment and development tools, our R&D is working on modern technologies and designing of wide array of complex telecom equipment, systems and solutions; which include:



NRTC PRODUCTS

PK-100B Jammer (FPGA Based)

- Modular Design
- High Speed Sweep
- Power output 130W nominal
- maintained in continuous mode
- Of operation
- Excellent power density, high efficiency
- And wide dynamic range
- Input power supply 28VDC
- High VSWR warning and protection
- High/Low Power Indication
- Highly rugged and Reliable



WB-200 Jammer

- Modular Design
- High Speed sweep jamming(VHF_low,VHF_high,UHF)
- High speed frequency hopped spot jamming on 10 programmable frequencies
- Handheld programming device
- Power output 200W nominal maintained in continuous
- Mode of operation
- Excellent power density, high efficiency and wide dynamic range
- Input Power Supply 28VDC
- High VSWR warning and protection
- High/Low Power Indication
- Highly rugged and reliable



Man-Pack 25-175MHz

- High speed sweep jamming(VHF_low, VHF_high)
- Power output 40W(VHF-low+VHF-high) nominal
- maintained in continuous mode of operation
- Excellent power density, high efficiency and wide
- Dynamic range
- Input power Supply 24 and 12VDC
- High VSWR warning and protection
- High/low Power Indication

PK-WB-300 Jammer

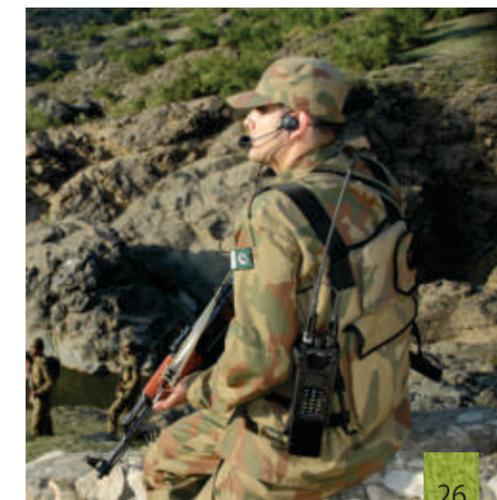
- Modular design
- High speed sweep jamming(VHF_low, VHF_high, UHF,GSM_900,GSM_1800)
- High speed frequency hopped spot jamming on
- 10 programmable frequencies
- DLU-VU-50" Handheld programming device"
- Power output 200W nominal maintained in continuous
- Mode of operation
- Excellent power density, high efficiency and wide dynamic range
- Input Power Supply 28 VDC
- High VSWR warning and protection
- High/low Power indication
- Highly rugged and reliable



Software Defined Radio

Based on its software configurable architecture, SDR ensure clear or encrypted voice and data communication in VHF and UHF frequency band (30-512 MHz) as well as full automatic integration with tactical and strategic networks to provide "cellular phone" services to tactical users.

- The radio transceiver features a 96x 64 graphical LCD display and a 3x6 keypad for easy man machine interface.
- The menu structure and controls are very similar to cellular phones for ease of use and training.
- SDR insure increased survivability against electronic Warfare threats by providing alternative communication function compared to conventional radios.
- The SDR is equipped with highly secure communication methodology owing to its frequency hopping feature, which makes the communication immensely cumbersome to be detected on wireless channel.
- The SDR has the capability of creating 30 channels TDMA packet switched network.



9600 Series VHF/FM Radio

9600 family offers a cost/performance optimized total system solution to the user being compatible and interoperable with current fielded VHF/ FM radios families like PRC-77,PK/VRC Series and PRC/VRC-4600 etc, direct replacement to 4600

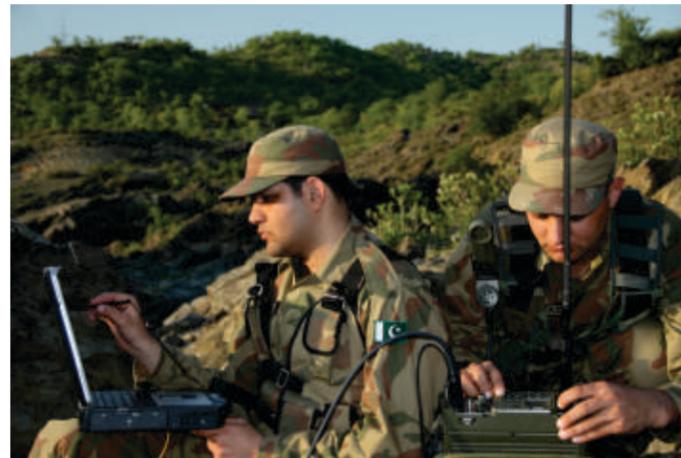
- radios. Frequency hopping
- Voice/ Data Encryption
- Burst Transmission

PRC-77 Up-Graded

The up gradation has been carried out incorporating certain modern design techniques along with the use of SMD components. Up-graded PRC-77 radio set have all the features of modern radio like encryption, integrated circuitry, digital synthesizer at a substantial lower cost as compared to new modern radio

Personal Role Radios (PRR)

The PRR (personal role radio) operates in 2.4GHz frequency Band using spread spectrum waveform-combination of time hopping, frequency hopping and OFDM. Duplex voice communication in a group of upto 30 users. Semi Duplex voice communication without limiting the number of users Conference call upto four users Wireless PTT keying Learning mode for wireless PTT key assigning VOX keying USB data interface



Land Mobile Radios

LMR Base Station Radios.
LMR Handheld Radios.
Mobile Radio.



Field Exchanges

PFX-6416 Digital Exchange.
PFX-3208 Digital Exchange.
PFX-1604 Digital Exchange.
Automag Field Exchange.



Bulk Encryptor 2M.

It provides secure communication at 2Mbit/s Data Rates. 2M is an online data crypto equipment which provides Secure communication up to secret level E1 PCM links, all Channels of E1 PCM links are encrypted ensuring data flow Security as well as data encryption. Encrypted or plain keys can be distributed to the system using. Electronic key management system.



Bulk Encryptor 34M

It provides secure communication at 34Mbit/s Data Rates 34M is a 34Mbit/s Bulk Crypto equipment which provides data E3 PCM links, all channels of E3 PCM links are encrypted ensuring data flow Security as well as data encryption. Encrypted or plain keys can be distributed to the system using Electronic key management system.

Bulk Encryptor 155M.

It provides secure communication at 155Mbit/s Data Rates 155M is a 155Mbit/s Bulk Crypto equipment which provide data at SMT-1 links, all channels are encrypted ensuring data flow Security as well as data encryption. Encrypted or plain keys can be distributed to the system using Electronic key management system.

Crypto Mobile Phone.

Operating in GSM,850/900/1800/1900 MHz standards, secure voice and data communication. It has plain voice communication, plain SMS transmission/reception with English language options and also has personal information management tools. Both, Hardware and Software GSM Secure Mobile Phone solutions are available.

Microwave Solutions

- PTP SDH / PDH Digital Radio.
- SADMC Digital Microwave Radio.
- SHSPC Digital Microwave Radio.
- SSTM1C Digital Microwave Radio.



Electronic Warfare

Variety of Indigenous EW Solutions have been developed.

Electronic Field Telephones

EFT 101.



Broadband Antennas

VHF/FM Antennas.



Power Sources

Batteries & Battery Chargers.



High Data Rate Telemetry Transmitter and Receiver.

Telemetry is an automated communications process for the transmission of measurement data from a remote, inaccessible or inconvenient location to a central receiving facility for measurement, monitoring, display and recording. Transmission of the information may be over wires or more commonly, by the radio. In general, telemetry also implies strict requirement for timeliness and data integrity



Network Centric System.

The NCS consists of a number of hierarchical command posts that receive and process information from different sensors. Timely availability of this information along with orders from the Command Post down to the weapon posts designated to engage a potentially hostile target is of prime importance.



Digital Radio Surveillance Equipment.

NRTC Digital Radio Surveillance Equipment (DRSE) for Reconnaissance and Surveillance purposes is ideal for analyzing the voice channels over Satellite and terrestrial Microwave links. Scalability and reconfigurable option in the equipment makes it suitable for use over wide range of bandwidth and spectrum. "All in one rack" solution provides easy logistics and move around capability of the equipment to different parts of the country as desired.



ELINT

Developed ELINT Threat Perception and Identification System for All kinds of Emitters offering:

- Broadband Coverage
- High accuracy and sensitivity
- Automatic and manual operating modes
- Classifier for Automatic Emitter Recognition
- GUI based Electronic Order of Battle



Digital Signal Recorder

DSRC1001 is a standalone device capable of recording 8 MHz wide spectrum or 2 Mbps modulated signals at configurable IF frequencies of 21.4 and 70 MHz. It can also be used as an integral component of NRTC Communication Intelligence Monitoring and Analysis Equipment. DSRC1001 has been equipped with many useful features and functions. It is a menu driven compact box allowing the user to carry out all integrated operations using navigational keys provided on its front panel.



Offline Signal Analysis System CSSA01

CSSA01 is a network centric signal analysis system essentially comprising of server-class machine for managing signal analysis activities, high-speed signal analysis machines equipped with FPGA based hardware accelerators and digital signal recorders. When put together, all these major components of CSSA01 form a robust server-client architecture integrating databases and information management system.



NGN-VoIP Monitoring

NGN/VoIP LI System is a highly modular and scalable LI (Lawful Interception) solution to fulfill Law Enforcement Agencies requirements for Telecommunication Services surveillance and Voice forensics over Telecommunication Networks for intelligence gathering in order to prevent terrorism and to provide criminal prosecution.



KARACHI SHIPYARD & ENGINEERING WORKS

KARACHI SHIPYARD & ENGINEERING WORKS

Karachi Shipyard is the only shipyard and oldest heavy engineering establishment of Pakistan, catering for shipbuilding, ship repair and general heavy engineering. It has played a historical role in transferring of technologies and broadening the industrial base of country.

Services

- Shipbuilding.
- Ship Repair.
- General Engineering.
- Material Testing Laboratory.
- Shipyard Institute of Technology.

KSEW PROJECTS

F22P Frigate

Length Overall	123m
Breadth	13.20m
Depth	10.20m
Draught (Max)	5.10m
Displacement	2980ton
Speed (max)	29 knots
Range	4000NM
Complement	183



Small Tanker

Cum Utility Ships (STUS)

Length overall	47.2m
Breadth	11m
Depth	5.8m
Designed draft	4.8m
Speed	15knots
Displacement	1600tons
Range	2000NM
Bollard pull	40tons



Gosta 90B Submarine

Length overall	76.24m
External diameter	6.80m
Displacement	1730tons
Operation depth	320m
Speed (max)	20knots
Endurance	68 days
Complement	36+5



Jalalat Class Missile Boat

Length Overall	39.00 m
Breadth	6.70m
Depth	3.60m
Draught	1.64m
Displacement	200tons
Speed	25knots
Complement	25



Fleet Tankers

Length Overall	156m
Beam (Max)	21.6m
Draft (Deep)	7m
Speed	20knots(Max) 15knots(Cruising)
Endurance & Range	10,000NM at 15knots
Propulsion and Storing system	2xDiesel engines twin screw CPP propellers
Accommodation	206personal
F-76/HSDO(Cargo & Bunker)	8158tons(7158-1000)
JP-5(Cargo & Bunker)	150tons(120+30)
Fresh Water (Cargo & Bunker)	1000tons(800+200)
Dy Ration	100tons
Naval stores & spares	3months



Split Hopper Barge

Designed to be deployed with cutter suction dredgers. Cutter suction dredgers cannot store dredged sediments on board, and for some applications it is not possible to discharge the dredged sediments through pipelines. In such cases, the dredged material can be pumped directly into split hopper barges, which are moored alongside the cutter suction dredger. Split hopper barges are also loaded by means of backhoe dredgers.

Coastal Oil Tanker

885 TDW Coastal Tanker (fuel, water and dry cargo) which can be modified to suit customers' requirements.



Floating Dock

Floating Docks are very useful for ports that do not have graving/dry docks. Can be towed to ports where required. Provides numerous advantages including onboard repair workshops, cranes, etc. KS&EW can construct state of the art Floating Docks with lifting capacity ranging from 1000~5000 tons.



32 & 10 Ton Bollard Pull Tug

KS&EW has constructed various tugs ranging from 10 to 40 Tons Bollard Pull; but construction of this Tug is distinct due to very robust design and state of art equipment and machinery to facilitate multi-purpose operations.

Harbour Utility Vessels

KS&EW has manufactured Harbour and Ocean going Tugs and other harbour utility vessels in various configurations. Many such vessels has been built for the National as well as International customer, meeting their specific needs and requirements.

Midgets Submarines

This type of Mini Submarine can be used for various purposes like attacking enemy units in harbour with Frogmen/Charriots, at sea with torpedos, at shore installations by commandos etc. Other uses include mine laying, defensive barrier in shallow waters, advance pickets duties, intelligence gathering etc.



Multipurpose Barge

The main role of the vessel is to collect compensated water from submarine fuel tanks and remove fuel contents to avoid pollution in harbour, diesel storage and supply and assist in harbour pollution control. The barge is 30m in length and equipped with pumps, ventilation system, fire pumps, generator and oily water separators.

Dredge Tender

Karachi Shipyard delivered a Dredge Tender to KPT. The vessel is 19.11 metres in length, 8.46 metres in breadth and 2.75 metres in depth. Its displacement capacity is 125 tonnes with draught aft of 1.7 metres. The construction was carried out according to Holland's Damen Multi Cat design.



MILITARY VEHICLE RESEARCH & DEVELOPMENT ESTABLISHMENT

MILITARY VEHICLE

RESEARCH & DEVELOPMENT ESTABLISHMENT

MVRDE's creation in 1972 owes itself to the national resolve to explore and build upon our indigenous technical and Industrial potential. MVRDE is thus fully involved in mobilizing, orientating and developing our public and private industrial sector to achieve progressive self-reliance in defence.

Capabilities: Military vehicle research and development Est(MVRDE) is a multi disciplinary organization capable of Conducting research and development pertaining to Military Vehicles, Engineering Equipments & defence related mechanical Systems. Its infrastructure encompasses a wide spectrum of facilities under following broad categories:

R&D Sections: to carry out design, development and product up gradation in following categories:

- **Armoured Vehicles** Tankss, APCC, ARVs.
- **Wheeled Vehicles** GS and Special Purpose.
- **Engineering Equipment** Earthmoving Machinery, cranes etc

Support & Quality Control Section: is engaged in implementation production and process control, evolving military specifications as well as carrying out material analysis, inspections and tests/trail.

Workshop Section: is equipped with necessary machinery, equipment, plant and manpower required for fabrication of mock-ups/functional models, defect investigation, product improvement as well as repair and maintenance of vehicles and equipment.

Material Testing & Lab: is well laid out for preparation, maintenance and preservation of Technical & Manufacture Data packages.

ARMAMENT RESEARCH & DEVELOPMENT ESTABLISHMENT

MVRDE PRODUCTS

MVRDE can be credited with successful completion of more than 120 indegenization projects. Various projects completed or currently in hand incapsulate the following:

Military Vehicles

retrofitting, reclamation and re-engineering

Armoured Protection

Add-on-Armour kits, ERA

Fabrication in ferrous/non-ferrous materials and alloys

Railway loading ramps

GRP technology

Boats, water carriage packs

Hydraulic System

Cranes, hoists, mobile trolleys

Mobility Enhancement

Hydraulic launched track ways-Class 30&60, Battlefield Bridges-AVLBS, ribbon bridges, HMBS, Mine-breaching equipment-Mine ploughs, Mole Ploughs, Test sets Soil Traffic ability



Special Purpose mobile shelters and carriers

EW shelters, mobileField kitchen, workshops, service stations, medical units.High Pressure Air-compressor for military Aircrafts.

Trailers & Semi Trailers

25, 45 and 60 ton semi-Trailer, missile & torpedo carriers.

Training Simulators

Designed and developed variety of training Simulators as per customized requirements.



ARMAMENT RESEARCH & DEVELOPMENT ESTABLISHMENT

Armament research & development establishment, ARDE excels in making armaments with precision and perfection.

ARDE PRODUCTS

Simulation Mine (AP)

It's a practice mine used for training of troops to depict actual environment of mine field with no risk to soldiers life. It produces puff of smoke, sound of flash with no injury to foot or soldier stepping over it.

Weight	102gm
Material	Plastic
Arming/Disarming	Manual



Mine A/Tk with double action fuse (RD-II)

To counter blasting of mine through trolls or flails etc double action Fuze has been developed to guard against this type of mine clearing.

Weight	7.25kg
Operating Load	250-300kg
Fuze Weight	150mg



Rocket 40mm practice shot RPG-7

The practice shot has been designed and produced to conduct training at minimum cost as the live round used for training is expensive, can be re-used number of times.



Multi-channel exploder (MCE)

Equipment has been developed which is capable to explode upto 20 percent Explosives at a remote distance using radio frequency or line wire. MCE comprises of master control unit with 20x slave firing units.

Communication mode	VHF
Operating Range	5km at RF 1.5km at landline
Operating Temp	10C to +60C
Battery Operation Time	72 hrs
Battery	12Vdc/2.1AH NiMH



